REMARKS

This paper is in response to the non-final Office Action of July 20, 2007 in which claims 1, 3-5, 9-19 and 23-26 were rejected and claims 6-8 and 20-22 objected to.

I. Subject matter of the claims

Independent claim 1 of the present application is directed at a method for determining a position of a peak of a pulse in a signal received at a receiver. The method comprises the following features:

A. Taking samples and determining at least three samples of said received signal, of which at least one has a signal strength exceeding a threshold value and determining the position of said pulse peak based on an interpolation of at least two of said determined samples, which at least two samples are selected based on the signal strengths of said at least three determined samples, and which interpolation includes an evaluation of the signal strength of said at least two samples.

B. Having different types of equations provided for said interpolation.

B.1 for different distributions of the signal strengths of said at least three determined samples.

Further an independent claim 12 directed at a corresponding apparatus and an independent claim 26 directed at a corresponding means + function apparatus are provided.

II. Cited References

The Examiner cites the following references to support his opinion:

US 6,118,808 (Tiemann et al)

This document discloses a method for determining the position of a pulse peak based on interpolation (column 18, lines 45-66). By averaging the squared samples, a

lower-noise estimate of the corresponding auto-correlation value is determined (column 18, lines 37-40). A method for interpolating between the two largest adjacent entries is disclosed by taking the intersection of the line formed by the left entry and its left neighbor and the line formed by the right entry and its right neighbor, which results in an estimated correlation peak time (column 18, lines 50-61).

"Curve Fitting Toolbox" July 2001 Version 1 ("Curve Fitting Toolbox")

This document is part of the user's guide for MATLAB and its component software Curve Fitting Toolbox. The relevant chapter describes how to fit data and evaluate the goodness of fit with the Curve Fitting Toolbox (page 3-1). Curve fitting refers to fitting curved lines to data (page 3-1). Interpolation is supported as nonparametric fitting method with different interpolant methods (page 3-68). The type of interpolant to be used should depend on, among other aspects, the characteristics of the data being fit (page 3-69). Supported interpolation methods are Linear, Nearest neighbor, Cubic spline and Shape-preserving (page 3-68).

III. Novelty and Non-obviousness

The Examiner considers claims 1, 3-5, 9-11, 12-19, 23-35 and 26 obvious over Tiemann et al in view of "Curve Fitting Toolbox" and rejects them accordingly. Applicant traverses below.

Independent claim 1

The Examiner considers feature A of **claim 1** to be disclosed by Tiemann et al. Further, she claims that feature B is disclosed by "Curve Fitting Toolbox" (page 3-68). The Examiner moreover claims that also feature B.1 is disclosed by "Curve Fitting Toolbox", also by referring to page 3-69.

Applicant however asserts that claim 1 is non-obvious over a combined reading of Tiemann et al and "Curve Fitting Toolbox" based on the following remarks:

a) There is insufficient motivation for someone skilled in the art to combine "Curve Fitting Toolbox" with Tiemann et al. The reason is that the requirements on

drawing a smooth curve through data, which is the aim of "Curve Fitting Toolbox" (page 3-68), are quite different from the requirements on determining a peak position, which is the aim of claim 1. In particular, different considerations apply. In the one case, having a complete and continuous curve is the objective, whereas in the other case the accurate determination of a single point in a fast way and with low burden on resources is desired, for which a determination of a curve is not required at all.

b) "Curve Fitting Toolbox" does not disclose feature B.1 of claim 1, because there is no indication that the "characteristics of the data" could comprise specifically the distribution of the signal strengths of the samples, as required by claim 1. There are various other characteristics of data that may be considered, for example the rate of change. Actually, in the only presented example the "Curve Fitting Toolbox" differentiates even between different general types of data having similar characteristics, like "nuclear reaction data" compared to other data. Considering "Curve Fitting Toolbox" a skilled person would thus assume the received signals of claim 1 to be always of the same type and to require always the same type of interpolation. Moreover, "Curve Fitting Toolbox" does not provide different types of equations for the interpolation for different distributions of anything. In order to do so, "Curve Fitting Toolbox" would have to provide something akin to B and B.1. Instead the user has to act by making his own selection as an intermediate step, deciding whether he prefers a large degree of smoothness or speed. "Curve Fitting Toolbox" does not disclose providing anything like that required by claim 1. Thus, "Curve Fitting Toolbox" would have to be modified to provide some kind of automatism for the selection of the particular equation. There is no motivation to do this.

Consequently claim 1 is non-obvious over Tiemann et al and "Curve Fitting Toolbox".

Other independent claims

The same applies to the other independent claims 12 and 26.

Dependent claims

The Examiner considers some of the dependent claims to be allowable.

The other dependent claims have to be considered to be new and non-obvious already due to their reference to a respective new and non-obvious independent claim. Contrary to the opinion of the Examiner, at least some of these dependent claims moreover define additional new and non-obvious features, which are pointed out for two exemplary claims for consideration by the Examiner:

The Examiner claims that dependent **claim 9** is disclosed by Tiemann et al., referring to Fig. 14. Applicant asserts that in fact claim 9 is not disclosed by Tiemann et al, because contrary to the Examiner's statement Tiemann et al do not perform a weighting of samples to compensate for deviations between a known model and a known real pulse shape. Rather, they take the average of several sequences of samples to reduce the effect of noise (col. 18, lines 37-41). This is independent of any assumptions about a deviation of the model pulse shape from the real pulse shape, because the noise effect would still be there even if the model pulse shape would be exactly like the real pulse shape. Moreover, it is also different in that it is an *a posteriori* operation only dependent on the actual sample data received whereas the approach of claim 9 is independent of the actually sampled data and depends only *a priori* considerations about the difference between the model pulse shape and the real pulse shape.

The Examiner further claims that dependent **claim 10** is disclosed by a combination of Tiemann et al and "Curve Fitting Toolbox", referring to page 3-73 of "Curve Fitting Toolbox". We assert that this is also not the case because neither Tiemann et al nor "Curve Fitting Toolbox" mention any corrections based on known deviations between model pulse shapes and real pulse shapes. In fact neither document makes any regard to a possible real pulse shape.

The same applies to claims 23 and 24.

The objections and rejections of the Office Action of July 20, 2007 having been obviated by amendment or shown to be inapplicable, withdrawal thereof is requested and passage of claims 1 and 3-26 to issue is earnestly solicited.

Respectfully submitted,

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